EFFICIENT NOTCH COEFFICIENT COMPUTATION FOR A DISC DRIVE CONTROL SYSTEM USING FIXED POINT MATH

Abstract of the Disclosure

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A method and apparatus for efficiently calculating notch filter coefficients for a disc drive actuator arm control system is disclosed. In a preferred embodiment, filter coefficients for a z-domain notch-filter transfer function are calculated in fixed-point arithmetic from polynomial interpolations of the non-linear functions that define the coefficients in terms of the notch frequency. These non-linear functions may be derived and interpolated *a priori* by applying the bilinear transform to an s-domain notch transfer function. Since, in a preferred embodiment, the z-domain transfer function can be expressed as a fraction, the numerator and denominator of the transfer function can be scaled so as to allow the coefficients to be expressed as integers, thus making it possible to calculate the filter coefficients from the aforementioned polynomial interpolations using fixed-point math.